## CLAIMS

1. A cardiac pacemaker comprising a stimulation pulse generator (RVP; LVP) for biventricular stimulation of a heart, which is to be connected to at least one right-ventricular electrode (16, 18) for the stimulation of a right ventricle of the heart and to at least one left-ventricular electrode (20) for the stimulation of a left ventricle of the heart and is connected to a control unit (30) and is adapted to trigger right-ventricular and left-ventricular stimulation pulses with an interventricular delay time which is adjustable by means of the control unit, wherein the control unit (30) is connected to an impedance detection unit (34) which is to be connected to intercardiac electrodes (16, 18, 20) and is adapted to form from an input signal formed by the impedance detection unit (34) and dependent on the intracardiac impedance, an output signal indicating an optimum biventricular stimulation mode,

characterized in that the control unit (30) is adapted

either to adjust that interventricular delay time, to indicate that electrode position, or to indicate that univentricular or biventricular stimulation mode, at which the second derivative of the pattern of the intracardiac impedance during a cardiac cycle or the intracardiac impedance averaged over a plurality of cardiac cycles is at the greatest, or

alternatively or additionally to derive the interventricular delay time in dependence on the maximum value of the impedance during a cardiac cycle or the intracardiac impedance averaged over a plurality of cardiac cycles.

2. A cardiac pacemaker as set forth in claim 1 characterized in that the control unit (30) is adapted to trigger various biventricular stimulation modes and to evaluate the intracardiac impedance for each stimulation mode.

3. A cardiac pacemaker as set forth in claim 1 or claim 2 characterized in that the control unit (30) is adapted to form from an input signal formed by the impedance detection unit (34) and dependent on the

intracardiac impedance, an output signal indicating an optimum interventricular delay time.

4. A cardiac pacemaker as set forth in one of claims 1 through 3 characterized in that the control unit (30) is adapted to form from an input signal formed by the impedance detection unit (34) and dependent on the intracardiac impedance, an output signal determining the interventricular delay time.

5. A cardiac pacemaker as set forth in one of claims 1 through 4 characterized in that the interventricular delay time is adjustable at between 20 and 40 ms.

6. A cardiac pacemaker as set forth in one of claims 1 through 5 wherein the stimulation pulse generator (RVP; LVP) is to be connected to different ventricular electrodes or ventricular electrodes which are variable in respect of their position in the heart, characterized in that the control unit (30) is adapted to evaluate intracardiac impedances for various electrode configurations or electrode positions and to indicate an optimum electrode position or configuration.

7. A cardiac pacemaker as set forth in one of claims 1 through 6 characterized in that the control unit (30) is adapted to set that interventricular delay time at which the second derivative of the pattern of the intracardiac impedance during a cardiac cycle is at the greatest.

8. A cardiac pacemaker as set forth in one of claims 1 through 7 characterized in that the impedance detection unit (34) is adapted to detect the impedance by way of voltage measurement which takes place between two electrodes (16, 20) of different electrode lines (12, 14).

9. A cardiac pacemaker as set forth in one of claims 1 through 8 characterized in that the cardiac pacemaker (22) is adapted to produce a current between a pacemaker housing and an intracardiac electrode for impedance measurement.

10. A cardiac pacemaker as set forth in claim 8 and claim 9 characterized in that the electrodes for voltage measurement are different from the electrodes for producing the current for impedance measurement.

11. A cardiac pacemaker as set forth in claim 9 or claim 10 characterized in that the cardiac pacemaker is adapted to produce a current for impedance measurement, which is of a substantially constant current strength of between 100 and 500 μA, preferably being 200 μA.

12. A cardiac pacemaker as set forth in one of claims 9 through 11 characterized in that the cardiac pacemaker is adapted to produce bi-phase current pulses for impedance measurement.

13. A cardiac pacemaker as set forth in claim 12 characterized in that the cardiac pacemaker is adapted to produce the bi-phase current pulses at a repetition rate of between 100 to 150 Hz, preferably at 128 Hz.

14. A cardiac pacemaker as set forth in claim 12 or claim 13 characterized in that the cardiac pacemaker is adapted to produce bi-phase current pulses at a pulse duration of between 20 and 40 μs, preferably at about 30 μs.

15. A cardiac pacemaker as set forth in one of claims 1 through 14 characterized in that the impedance detection unit (34) or the control unit (30) is adapted to average the impedance in a time window of between 50 and 300 ms duration.

16. A cardiac pacemaker as set forth in claim 15 characterized in that the impedance detection unit (34) or the control unit (30) is adapted to start the time window with the detection of a left-ventricular event (contraction).

17. A cardiac pacemaker as set forth in claim 15 characterized in that the impedance detection unit (34) or the control unit (30) is adapted to calculate an intracardiac impedance pattern.

18. A cardiac pacemaker as set forth in claim 15 characterized in that the impedance detection unit (34) or the control unit (30) is adapted to determine one or more of the following parameters of the intracardiac impedance pattern: $Z_{ED}$, $Z_{ES}$, $T_{ES}$, $Z_{min}$, $T_{min}$, $(Z_{ES} - Z_{ED})$, $(Z_{ES} - Z_{min})$, $((Z_{ES} - Z_{min})/T_{ES})$, $((Z_{ES} - Z_{min}) /(T_{ES} - T_{min}))$, $Z'_{max}$, $Z''_{max}$, $T'_{max}$ and $T''_{max}$.

19. A cardiac pacemaker as set forth in one of claims 1 through 18 characterized in that the cardiac pacemaker (22) is in the form of a dual-chamber pacemaker with at least one ventricular and one atrial detection unit (VS, AS), for the detection of ventricular and atrial events respectively.

20. A cardiac pacemaker as set forth in one of claims 1 through 19 characterized in that the cardiac pacemaker (22) is in the form of a rate-adaptive cardiac pacemaker in which a stimulation rate is determined on the basis of a measurement value which is characteristic of a physiological demand of a patient.

21. A cardiac pacemaker as set forth in one of claims 1 through 19 characterized in that the cardiac pacemaker (22) is in the form of a rate-adaptive cardiac pacemaker in which a stimulation rate is set on the basis of an evaluation of the intracardiac impedance, in such a way that the variation in the intracardiac impedance is maximized.